critical faculties of both patients and some members of the profession. If the reader is unconvinced by this attitude, may I remind him of the thalidomide tragedy?—I am, etc.,

Oldham, Lancs.

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Early Diagnosis of Large Bowel Cancer

SIR,—Your leading article (9 March, p. 592) emphasizes the value of a simple test for blood in faeces in screening for possible causes of gastrointestinal disease including carcinoma. We have recently surveyed 53 patients referred to us with unexplained hypochromic anaemia. Gastrointestinal blood loss was measured with ⁵¹Cr tagged red cells¹ and three consecutive specimens of faeces were tested with the "Hematest" tablet (Ames Company Ltd.). Correlation was good; 22 gave negative results by both methods. In 27 cases the faeces contained more than 3 ml. of blood per 100 g., and all gave positive "Hematest" results within 100 seconds. In four cases the tablet test was doubtful and the specimens contained 1–2 ml. of blood per 100 g. of faeces. We conclude that the "Hematest" tablet is sensitive enough for the detection of most cases of significant bleeding. As no special precautions with diet are necessary, it is ideal for general-practitioner use and should be employed in all cases of hypochromic anaemia. We think that previous views² that the tablets have too low a sensitivity may have prejudiced against their routine use.

Further investigation of the 27 patients with significant bleeding resulted in the following diagnoses:

Radiologically Demonstrated		Not Radiologically Demonstrated	
Hiatus hernia ...	4	Carcinoma of jejunum ...	2
Carcinoma of stomach ...	2	Benign ulcer of ileum ...	1
Benign tumour of stomach ...	1	Intussusception of ileum ...	1
Duodenal ulcer ...	1	Haemangioma of caecum ...	1
Carcinoma of caecum ...	1	Carcinoma of caecum ...	2
Diverticulitis of colon ...	2	Diverticulum of caecum ...	1

In eight patients a diagnosis was not made. Our results indicate that lesions of the small intestine and caecum are a relatively common cause of hypochromic anaemia, and support the plea that every case demonstrated to be due to gastrointestinal bleeding demands a determined search including exploratory laparotomy.³—We are, etc.,

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Immunosuppression and Antibiotics

SIR,—I read with interest your leading article on "South African Heart Transplant" (20 January, p. 132). You referred to the fact that the patient was barrier-nursed in a special room, and great care was taken against introducing infection, but there was no information as to whether the doctors considered the pathogenicity of the so-called "opportunistic" bacteria—*E. coli*, *Proteus*, *Klebsiella pneumoniae*, *Pseudomonas aeruginosa*—and *Pneumocystis carinii* and *Candida albicans*, which can produce even fatal disease in a patient who is on immunosuppressive therapy.

There is no information as to whether they were looking for Gram-negative bacteria in the sputum, in the nasopharyngeal smear, or in blood and faeces. The broad-spectrum antibiotics give a false sense of security, but our experience shows that the *Kl. pneumoniae* is very often resistant against chloramphenicol and often against streptomycin, neomycin, and polymyxin B also.

Our opinion is that the antibiotic protection of a patient undergoing heart transplantation should be based upon these facts too. The combination of oxacillin, cephaloridin, and polymyxin B has proved to be effective against Gram-negative bacteria; and gentamicin is effective against *Pseudomonas aeruginosa*.¹—I am, etc.,

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REFERENCE

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Influenza Virus and Carcinogenesis

SIR,—Regarding the cancerogenesis from influenza virus in the lungs of mice reported by Drs. R. J. C. Harris and G. Negroni (16 December, p. 637) I should like to report the results of an investigation of my own, in which I exposed mice of the Swiss strain to the inhalation of an aerosol of *Myxovirus influenzae B* Lee at the dose of 10⁶ egg infectious doses (E.I.D.) for 15 minutes.^{1–3}

With the electronmicroscope I observed specific damage in the alveolar cells containing lamellar inclusions. In effect, the reproduction of the virus took place at the level of cell membranes (Fig.) as well as in the membranes of the apparatus of Golgi and in those of the lamellar inclusions.

According to current opinion,⁴ these lamellar inclusions produce the tensioactive substance responsible for pulmonary elasticity. I submit that the lamellar inclusion damage wrought by the influenza virus could

Influenza viruses B Lee in an alveolar cell containing lamellar inclusions. Arrows indicate virus particles. (×35,000.)

result in carcinogenesis through two distinct mechanisms. One is by favouring the stagnation of inhaled carcinogens through reduced alveolar elasticity. (The contact time of carcinogens is often a decisive factor, as exemplified by the high frequency of vesical carcinoma in aniline workers as contrasted with the rarity of tumours of the renal pelvis where the passage of urine is rapid.)

Secondly, the loss of alveolar elasticity and reduced alveolar oxygenation may lead to sclerosis, which in turn may represent a carcinogenic factor. There is currently a tendency to find similarities between tumours from plastic substances and tumours from sclerosis;^{5,6} the latter may include tumours that develop at the sites of previous burns, frostbite, chronic osteomyelitis, pulmonary tuberculosis, lupus, and the like.—I am, etc.,

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Deaths from Asthma

SIR,—In their article on the increase in asthma deaths Dr. F. E. Speizer and others (10 February, p. 339) point out that catecholamines were the drugs used most often immediately before the terminal episode and that isoprenaline, usually in the form of an aerosol spray, was most frequently preferred.

Any drug given in the form of an aerosol would reach the smooth muscle of the bronchi in the full dose very rapidly. If the patient repeated the inhalation sooner than had been recommended he would rapidly receive an overdose. Isoprenaline is a drug which normally has the beta actions of adrenaline. It relaxes the smooth muscle of the arterioles and the bronchi; and it increases the rate and force of contraction of the heart. However, if it is given in repeated doses at frequent intervals its action changes. It no longer further stimulates the heart; it does not dilate the blood vessels but actually constricts them.¹ Isoprenaline inhibits the smooth muscle of the uterus, but in the presence of this drug the uterus starts to escape from the inhibition and a second dose of isoprenaline now causes contraction.² The uterus therefore escapes from the effect of isoprenaline, becomes resistant to its inhibitory effect, and the action of the drug is reversed. The uterine contraction induced by isoprenaline in these circumstances is readily antagonized by Hydergine (dihydroergocornine, dihydroergocristine, and dihydroergocryptine).³

As reversal of the action of isoprenaline occurs in several different types of smooth muscle, it might also occur in the bronchi. If this is so administration of excess isoprenaline might induce bronchospasm. Endogenous adrenaline is another possible contributory factor. Normally adrenaline relaxes arterioles in skeletal muscles, but this action is reversed by pretreatment with large doses of isoprenaline.⁴ Adrenaline normally relaxes